

ABSTRACTFast acquisition procedure for TDD W-CDMA

- 5                   The present invention is related to a method  
for the acquisition of burst synchronisation signals in a  
spread spectrum communication system, comprising the  
following steps:
- 1) Receiving a burst synchronisation signal,
  - 10 2) Applying to the received burst synchronisation signal a  
dwelling procedure according to a scheduling scheme,  
whereby the dwelling procedure comprises the steps of  
calculating a matched filter output, summing the outputs  
over one slot time, calculating the energy in the sum,  
15 searching the maximum energy value and passing it to a  
Random Access Memory,
  - 3) Based on the scheduling scheme containing a set of  
 $X = (N+1)/2$  hypotheses, being numbered  $0, 1, \dots, X-1$  and  $N$   
being the number of slots in 1 frame, the slots being  
20 numbered  $0, 1, \dots, N-1$ , a dwelling procedure being performed  
in hypothesis  $n = 0, \dots, X-2$  in slots  $n$ ,  $n+N-D$  and  $n+D$  and in  
hypothesis  $n = X-1$  in slots  $n$  and  $n+D$ ,  $D$  being the longest  
distance in slots between two sync slots,
  - 4) At the end of the scheduling scheme searching for the  
25 overall maximum energy value among the energy values  
stored in the Random Access Memory,
- Wherein the scheduling scheme is built up by
- (a) choosing any hypothesis from the set of  
hypotheses,
  - 30 (b) performing dwelling procedure in the frame  
slots as indicated in the chosen hypothesis,
  - (c) leaving one slot open after the last dwelling  
procedure for the chosen hypothesis,

- 5 (d) choosing an hypothesis not used yet, having  
in the next available slot a dwelling  
procedure in that slot and not in the  
subsequent slot or having in the next  
available slot a dwelling procedure in that  
slot as well as in the subsequent,
- (e) performing dwelling procedure in the frame  
slots as indicated in the chosen hypothesis,
- 10 (f) leaving one slot open after the last dwelling  
procedure for said hypothesis,
- (g) repeating (d-f) until all hypotheses have  
been used, whereby in case there is no unused  
hypothesis that matches, the slot is left  
empty and the following slot is used.